(b) <u>REMARKS</u>:

The claims are 1-7 with claim 1 the sole independent claim. Reconsideration of the claims is requested in view of the remarks which follow.

Claims 1-7 were rejected as obvious over USPGP2003/044708 (Matsunaga) in view of Sawada USPGP2003/0039909 considered with JP 06-118700 (JP '700). Claim 4 was rejected as obvious over the same references further in view of Ohtani, USP4,789,613.

The Examiner argues that Matsunaga '708 discloses each of the recitations in Claim 1 except the specific gravity of 1.3 to 1.7 g/cm^3 and the dielectric loss tangent of Formula 1. The Examiner argues that Sawada discloses the specific gravity range and that JP '700 discloses the Formula 1 dielectric loss tangent. The grounds of rejection are respectfully traversed.

Prior to addressing the grounds of rejection applicants wish to briefly review certain key features and advantages of the present claimed invention. As noted in specification paragraphs [0017]-[0024] the value of dielectric loss tangent is used to indicate how readily a magnetic toner retains its charge. In the present invention dielectric loss tangent indicates, specifically, the rate at which the charging property changes when temperature, humidity, bias, and the like are changed. Applicants have found that the value of dielectric loss tangent can be reduced by improving the dispersibility of a magnetic material or body in a toner. The rate of change of dielectric loss tangent increases as lesser amounts of magnetic material are added. Therefore, at lower amounts of added magnetic material in the toner dielectric loss tangent rate increases.

Therefore, rate of change of dielectric loss tangent between an ordinary state and a weakly molten state (i.e. - above and below the glass transition temperature) indicates developer stability. As noted in paragraph [0022] the 100 Khz standard is used to examine the dispersed state around the (Tg)- glass transition temperature (i.e. ± 10°C of the Tg). In other words, the dielectric loss tangent at 100 Khz indicates the degree of dispersion of the magnetic body in the toner.

If the dielectric loss tangent is measured at lower than 100 Khz, the glass transition temperature of the binder resin would affect the dielectric loss tangent. Hence, it would be difficult to precisely determine the dielectric loss tangent (paragraph [0022] of the specification).

The toner of the present invention has a true specific gravity of 1.3 to 1.7 g/cm^3 and as noted above the toner of the present invention employs reduced amounts of magnetic body compared to conventional toners.

The Comparative toner 3 of the present specification was produced using 75 parts by weight of the magnetic body with respect to 100 parts by weight of the binder resin. See Table 6. However, the Comparative toner 3 has a true specific gravity of 1.72 g/cm^3 which is beyond the scope of the present invention.

With regard to a magnetic toner such as the toner of the present invention, having reduced amounts of magnetic body compared to conventional amounts, it is necessary that agglomeration of magnetic body in the toner is suppressed and that the magnetic material is uniformly dispersed in the toner so that the dielectric loss tangent (measured at 100 kHz of the toner) is within the scope of the present invention.

Matsunaga discloses that a magnetic body is generally present in amount of 20 to 200 parts by weight with respect to 100 parts by weight of binder resin. However, Matsunaga fails to disclose use of decreased the amounts of magnetic body relative to a conventional toner.

The toner of the working Example of Matsunaga contains 90 parts by weight of magnetic body with respect to 100 parts by weight binder resin. Matsunaga fails to disclose that by reducing magnetic material, and maintaining a uniform dispersion, when the dielectric loss tangent thereof is measured at 100 Khz, unexpectedly superior properties are attained.

In Comparative toner 3 of the present application the dielectric loss tangent is satisfied based on a high magnetic body content. However, when a magnetic toner is produced without regard to the state in which the magnetic body is dispersed in the toner, the magnetic body is generally not uniformly dispersed even when the amounts of magnetic body used are decreased. As a result, such a toner does not satisfy the requirement regarding the dielectric loss tangent of the present invention (the Comparative toner 1 of the present application). In Table 7 where high amounts of magnetic material are present as in Comparative toner 3, there is high toner consumption, image deterioration and poor fixability. The higher specific gravity is a measure of the increased amount of toner.

The present invention relates to a magnetic toner having lower value of true specific gravity and a specific saturation magnetism (i.e. employing reduced amounts of magnetic material,) where the dispersed state of the magnetic body is controlled to satisfy specific conditions. The dielectric loss tangent provides an indication of the uniformity of the dispersed state of magnetic material in the toner.

Matsunaga fails to teach the benefits a magnetic body having smaller amounts of magnetic body. Further, Matsunaga fails to disclose advantageous effects obtained by using the toner satisfying the requirements of the present invention.

Sawada teaches nothing about improving the dispersed state of metal materials in a toner. The toner produced by Sawada is not indicated to have the dispersed state of the present invention. Sawada does not even use metal materials to satisfy specific magnetic properties, but uses metal materials merely as a filler. In the Examples of Sawada, hematite, a nonmagnetic material, was used.

JP '700 discloses results of dielectric loss tangent of a toner measured at 10 Hz and focuses mainly on the glass transition temperature of a binder resin. As described in the present specification, the dispersed state of the magnetic body cannot be measured by a measurement at 10 Hz, and, under the circumstances, it should be concluded that the magnetic body is not in a uniformly dispersed state in the toner of JP '700.

It has been found that to provide enhanced charge stability the dielectric loss tangent (tan ∂) of the toner at 100Khz satisfies formula (1) and is ≤ 0.20.

As previously argued, the Examiner has stated that as a toner is heated to and beyond its glass transition temperature, the peak dielectric loss tangent (tan ∂) will coincide with the glass transition temperature of the toner, and the shape of the peak is symmetrical. However, in the case of a magnetic toner, the dielectric loss tangent is greatly affected by polarization of a magnetic material in the toner. Accordingly, the shape of the dielectric loss tangent does not typically show the bilateral symmetry at the nexus of the glass transition temperature (Tg) of a resin as disclosed in Drawing 1 of JP '700. Where a toner contains magnetic material, the peak of the dielectric loss tangent is greatly affected

by the way in which the magnetic material is dispersed in the toner (see instant specification, paragraph [0019]). Especially in the case of a toner which has a lower true specific gravity (1.3-1.7g/cm^3) and a reduced magnetic material content (25-70 parts magnetic material per 100 parts resin - [0029]) as in the toner of the present invention, the peak of the dielectric loss tangent is significantly affected by the dispersed state of the magnetic material in the toner. The instant claimed saturation magnetism reflects the presence of such reduced amounts of magnetic material.

The toners of the Examples in the instant specification are obtained by methods designed to enhance the dispersability of the magnetic material in the toner. For Example, the toner can be obtained by controlling the viscosity of a molten product through the adjustment of a kneading temperature to be equal to or higher than the softening point of the binder resin at the time of hot-melt kneading (see, page 12, paragraph [0019], of the specification). The toner can also be produced, for example, by incorporating a larger amount low-molecular-weight component having a molecular weight of 10,000 or less into the binder resin (see, page 26, paragraph [0052]. Alternatively, for example, the toner can be obtained by employing a binder resin having a small particle size in the step of mixing raw materials (see, page 26, paragraph [0053]). The toners obtained by using the above exemplary methods have improved dispersability of the magnetic material in the toner. As a result, the dielectric loss tangent (tan ∂) of the toners are satisfied by formula (1) in claim 1.

As stated above, the theory disclosed in JP '700 cannot be simply applied to Matsunaga since the theory does not take into acount the effect of dispersibility of the magnetic material in the toner. Furthermore, the content of the magnetic material in

Matsunaga is more than that in the present invention. Therefore, the true specific gravity of the toner is beyond that claimed in the present invention. In Matsunaga the magnetic material is generally present in amounts up to 200 parts per 100 parts binder and, in the Examples, typically 100 parts resin to 90 parts magnetic material, as contrasted to the 25-70 parts magnetic material per 100 parts binder typically present in applicants' toner. In Matsunaga the saturation magnetism is typically up to 200 Am^2/ka, preferably 70-100 Am^2/kg, as contrasted with 20-35 Am^2/kg of the present invention.

Therefore, Matsunaga does not teach improving the dispersed state of the magnetic material in a toner having a relatively low content of magnetic material. In Matsunaga, merely reducing the content of the magnetic material in the toner can not lead to a toner satisfying formula (1) of the present invention. The magnetic material must also be well dispersed. Additionally, Sawada, et al. does not disclose improving the dispersed state of a metallic material.

The claims should be allowed and the case passed to issue.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

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